and reducing power of the products of hydrolysis by emulsin, and suggested as an index of enzymolytic reduction the weight of reducing substances, calculated as glucose, formed in 100 c.c. by the action of emulsin corresponding to a rotation of 1° observed in a 2 dcm. tube. After showing the different uses of this method, he gave a list of medicinal plants in which the presence of glucoside had been shown by this means, but which had fallen into disuse, as no active principle had been separated formerly.

Prof. Herissey explained a chemical method of obtaining the true glucoside arbutin, which gives glucose and hydroquinone on hydrolysis with emulsin. Commercial arbutin, extracted from *uva ursi*, is a mixture of true arbutin and methyl arbutin, and this, on being treated with alcoholic potash, gives a precipitate of the potassium salt of true arbutin, from which the glucoside can easily be obtained in a pure state. This glucoside is apparently identical with that isolated recently from the leaves of the pear tree by Prof. Bourquelot and Mlle. Fiehlenhots.

Mr. Leger described his experiments which had led to the establishment of the constitution of the aloins. These experiments show that barbaloin and isobarbaloin are glucosides which can with difficulty be split into alœmodin and α arabinose. These two aloins are stereo-isomers. Nataloin, treated with sodium peroxide, furnishes methyinanatœmodine, decomposable by hydrochloric acid into natalœmodin and methyl chloride. Nataloin appears to contain in its molecule a pentose sugar.

Prof. Perrot described the method which he, in collaboration with Mr. Goris, has devised for obtaining dried plants in which the properties of the fresh plants are preserved; the principle upon which the method is based is the destruction of the diastase.

Mr. Hercod read a paper by himself and Mr. Maben on the assay of pepsin, and the congress decided to refer the question to an international committee with a view to establishing an international standard and method of assay.

Mr. Moller read a paper dealing with the determination of colours, and the congress agreed to recommend the adoption, as an international code of colours, of the code of Klinksieck and Valette.

The above is a brief summary of the work accomplished at one of the most interesting international meetings of pharmacists which has ever been held. It should also be mentioned that a decision was arrived at to form a permanent international pharmaceutical association, the headquarters of which will probably be at the Hague.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

MR. PHILIP WARD, who has just been appointed a Commissioner of National Education in Ireland, is the first national teacher to fill the position. He is a former president of the National Teachers' Organisation.

THE following courses of Gresham science lectures are announced for delivery at the City of London School, Victoria Embankment:—Geometry, by Mr. W. H. Wagstaff, on October 4, 5, 6, and 7; physic, by Dr. F. M. Sandwith, on October 25, 26, 27, and 28; astronomy, by Mr. S. A. Saunder, on November 7, 8, 10, and 11.

PROF. GOLDWIN SMITH, according to the Toronto correspondent of the *Times*, has bequeathed the sum of 140,000*l.* to Cornell University "to show my attachment as an Englishman to the union of the two branches of our race on this continent with each other and with our common mother"; the greater part of Prof. Goldwin Smith's library, and 1800*l.*, are left to the University of Toronto.

THE new calendar of the Battersea Polytechnic shows an increase of work in all departments. In connection with the engineering and building department, new evening classes are being commenced in pattern-making and architectural measurements, and in connection with the gun-making section a course of study extending over three years has been arranged in gun and ammunition manufacture. A course has also been arranged by request of the Institute of Certificated Grocers on subjects which appeal to the grocery and provision trade. The chemistry department is extending its work by providing more advanced instruction in paper-making and bacteriology, and new classes in soap manufacture. In the women's department, a third-year day course of science as applied to housecraft has been arranged. The new library presented by Mr. Edwin Tate, at a cost of 8000*l.*, is to be opened by the Archbishop of Canterbury on Friday, October 21.

THE Belfast University Commissioners have decided to establish a faculty of commerce within the University, to consist of the professors and lecturers in the subjects of the faculty, and in addition there will be an advisory committee. In framing the curriculum the needs of three classes of students have been borne in mind:—those who are, or expect to be, engaged in business; those who are preparing for the administrative work of the State or the municipality; and those who contemplate social or philanthropic work. It is proposed to grant a degree in the faculty to matriculated students who have pursued prescribed courses of study for at least three years and who have satisfied the examiners in certain subjects. To meet the case of students unable to devote to these subjects the time necessary for the acquisition of a degree, a diploma in commerce or a diploma in social science will be granted after a two years' course and the passing of the prescribed examinations.

THE issue of the Bulletin of Armour Institute of Technology, Chicago, for May last, which has reached us, is a general information number, which differs little in character from the calendars and prospectuses published at this time of the year by colleges and technical institutions in this country. The work of the institute in Chicago was begun in 1893. Four-year courses in mechanical and electrical engineering were first organised. A union was effected with the Art Institute of Chicago for the purpose of developing the course in architecture which that institution had maintained since 1889. The result was the establishment of the Chicago School of Architecture. In 1899 the course in civil engineering was added, in 1901 the course in chemical engineering, and in 1903 the course in fire-protection engineering. The courses in these subjects all lead now to the degree of Bachelor of Science. Each of these four-year courses represents a balanced group system of studies, combining a thorough and broad scientific training with the elements of liberal culture.

THE Department of Agriculture and Technical Instruction for Ireland has issued its programme for technical schools and science and art schools and classes for next session. The regulations which were in operation during the session 1909–10 will continue in force, with one alteration only. Small schools are to be permitted to adopt specialised courses of instruction covering a period of two years only. A prefatory note points out that the schools and classes working under this programme are mainly, though not exclusively, evening schools, and adds that instruction in evening classes cannot form a substitute for the more general and systematic education given in day schools, whether primary, secondary, or technical. The work of such evening schools and classes constitutes a specialised form of education intended to fit those receiving it for industrial or commercial pursuits, or to render those already engaged in such pursuits more efficient in their work. Attendance is purely voluntary. Those attending are for the most part engaged, or about to be engaged, in some form of industry, and are meeting problems and difficulties which the evening technical school can help them to solve. They perceive that the higher branches of their calling may be reached only by increased technical skill and knowledge; but progress is hindered by several circumstances: hitherto the previous preparation of students joining evening technical schools has in many cases not been such as to fit them for the specialised form of instruction which it is the special function of such schools to impart. An attempt is made in these regulations to remedy this defect.

THE recently issued syllabus of classes at the Sir John Cass Technical Institute, Aldgate, for the coming session shows that graded curricula of study extending over

several years are provided for those engaged in chemical, electrical, and metallurgical industries. In addition, several special courses of instruction are to be given; in the chemistry department there is to be a course of work for those engaged in the fermentation industries, which includes lectures and laboratory instruction in brewing and malting and on the micro-biology of the fermentation industries, as well as a series of courses on liquid, gaseous, and solid fuels. In the metallurgical department special courses of an advanced character are provided on gold, silver, and allied metals, on iron and steel, and on metallography. The winter session at the Merchant Venturers' Technical College, which has just commenced, is the fifty-first held in connection with this institution. It will be remembered that the faculty of engineering of the University of Bristol is provided and maintained in the college. The new calendar, in addition to necessary general information, supplies full particulars of the day classes of the Bristol School of Commerce, the faculty of engineering of the University of Bristol, the extensive evening classes, and the school of art. The calendar also contains a list of gifts and loans to various departments of the college made by numerous manufacturing firms and learned societies, which shows that the college authorities are successful in securing the cooperation of employers of labour and others in the useful work they are doing in providing suitable technical instruction for the workers of the district.

THE first congress of the newly established Textile Institute, the objects of which are to promote the interests of the textile trades, was opened on Thursday last at Bradford by Lord Rotherham, who, in his inaugural address, said he looked for the institute to do its part in establishing cordial relations between men of science and practical spinners and manufacturers. The delivery of the address was followed by the reading of a paper by Mr. F. Warner on technical education in relation to the textile industries, in the course of which the author said that the existing system of education is overcrowding the office and starving the factory and workshop. Great Britain cannot afford to scrap from 5 to 7 per cent. of the working population, and the remedy for the present evil is more technical instruction and the practical training of the rising generation in industry and trade. The old apprenticeship system had manifest advantages, and its revival was suggested; but modern technical instruction, properly applied, offers advantages to the student for advancement which were impossible to the apprentice. Day classes should, by the cooperation of employers, be arranged to a far greater extent than was now the case, and in this respect England is far behind modern practice in the textile trades abroad. An essential requirement is proficient art teaching, for though in the perfection of cloth structure British goods are unsurpassed, in the class of fabric in which design and colour are required the reputation of our manufacturers is on a lower plane. Mr. Warner advocated the formation of a national department which, controlled by a council composed of captains of industry in all branches of manufacture and commerce, and of artists, designers, and educationists, could deal directly with art and technical schools. A similar system should also be put in operation in local centres. The financial difficulty should be met both by local and Government aid.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, September 5.—M. Bouchard in the chair.—Madame P. **Curie** and A. **Debierne**: Metallic radium. Starting with 0·106 gram of the purest radium chloride (atomic weight 226·5), the method of Guntz for the preparation of metallic barium was followed. The radium chloride in aqueous solution was electrolysed with a mercury kathode and a platino-iridium anode. After the electrolysis the solution contained 0·0085 gram of the salt. The amalgam decomposed water and was readily attacked by the air. The dry amalgam was rapidly transferred to a clean iron boat, the latter placed in a quartz tube, and was rapidly evacuated. The distillation of the mercury from the amalgam offered some difficulties; to prevent visible ebullition, which resulted in loss by projection, the tube was filled with carefully purified hydrogen, the pressure of which was kept slightly above the pressure of the mercury vapour at the temperature of the boat. At the close of the operation the metal was left in the boat, brilliantly white, and melting sharply at 700° C. The authors regard this as sensibly pure radium. The metal alters very rapidly in air, blackening immediately, probably owing to the formation of a nitride. Some particles detached from the boat, falling on white paper, produced a blackening similar to a burn. Radium energetically decomposes water going into solution, indicating that the hydroxide is soluble. Radio-active measurements showed that the increase of activity followed the usual law for the production of the emanation, the limiting activity of the metal becoming normal. Since it was found that the metallic radium was much more volatile than metallic barium, it is proposed to purify the metal by sublimation in a vacuum.—Léon **Kolowrat**: The β rays of radium at its minimum activity. The author has repeated the experiments of O. Hahn and Mlle. Meitner, and has arrived at conclusions confirming the existence of a very absorbable β radiation.—Georges **Baume** and F. Louis **Perrot**: The fusibility curves of gaseous mixtures: compounds of methyl oxide and methyl alcohol with ammonia gas. The results of these cryoscopic researches are given in graphical form.—J. B. **Senderens**: The preparation of acrolein. It has been found that potassium bisulphate reacts catalytically with glycerol, so that, instead of adding the bisulphate in the proportion of twice the weight of glycerol, as is customary, one-fiftieth of this amount of the bisulphide is sufficient.—Paul **Gaubert**: Soft crystals and the measurement of their indices of refraction. Figures are given for the refractive indices of crystals of beeswax, ammonium oleate, ozokerite, paraffin, and lecithine.—R. **Robinson**: The vessels of the fork of the median nerve. A contribution to the study of the manual dexterity of man.

CONTENTS.

	PAGE
Bibliography of Atlases	325
Lead and Zinc Pigments. By Dr. A. P. Laurie	325
Meteorological Tables. By E. Gold	326
Plants and Gardens	326
Our Book Shelf	327
Letters to the Editor:—	
Lord Morton's Quagga Hybrid and Origin of Dun Horses.—Prof. James Wilson; Prof. J. C. Ewart, F.R.S.	328
An Undescribed Feather Element. (*Illustrated.*)—Fredk. J. Stubbs	329
An Interesting Donkey Hybrid.—R. I. Pocock	329
British Marine Zoology.—Prof. W. A. Herdman, F.R.S.; Prof. E. W. MacBride, F.R.S.	329
The Origin of the Domestic "Blotched" Tabby Cat.—H. M. Vickers	331
The Reform of Oxford University. By F. A. D.	331
Medical Education in the United States and Canada	332
The Sheffield Meeting of the British Association	333
Section C.—Geology.—Opening Address by Prof. A. P. Coleman, M.A., Ph.D., F.R.S., President of the Section	333
Notes	339
Our Astronomical Column:—	
Metcalf's Comet, 1910*b*	344
A Suspected New Planet	344
Definitive Elements for Comet 1852 IV.	344
A Suggested Volcanic Origin of Martian Features	344
The Passage of the Earth through the Tail of the 1861 Comet	344
The Spectrum of Cyanogen	344
Researches on the Colours of Stars	344
"Mock Suns"	345
The Relation of Science to Industry and Commerce. By R. Blair	345
Royal Sanitary Institute	353
International Congress of Pharmacy	354
University and Educational Intelligence	355
Societies and Academies	356